

Abstract Submitted
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An Interpolative Particle-Level Set Method for Interfacial Physics¹ LINDSAY CROWL ERICKSON, JEREMY TEMPLETON, KARLA MORRIS, Sandia National Laboratories — We present a novel hybrid particle level set method for solving multiphase flow problems involving moving interfacial dynamics. Our method incorporates the advantages of a Lagrangian particle approach to correct errors due to numerical diffusion in the level set equation and resolve spatial inhomogeneity at a finer scale than is attainable from the background mesh on which the Eulerian level set equation is solved on. We propose a new interpolative particle level set method that uses a (bi/tri) linear interpolation scheme to correct the level set field near the interface in a smooth fashion and uses all nearby particles instead of just escaped particles. Our results show that this method can outperform the original particle level set method by retaining a smooth corrected level set field near the interface and requiring fewer Lagrangian marker particles per grid cell in the correction procedure.

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